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ABSTRACT

A paired-comparisons measure of distributive justice development, the Distributive Justice Scale (DJS), was developed and validated in four studies. Pictures were drawn to represent the different stages of distributive justice for a given dilemma and the DJS was scored by selecting the child's preferred stage via the picture comparisons for each dilemma. In Study 1, 104 children from kindergarten, grades 2 and 4 were given the DJS and two Piagetian logical reasoning tasks. Age trends and a relationship with logical reasoning were found. In Study 2, 66 children from grades 1, 3, and 5 were given the DJS and a measure of verbal ability. Age trends and a low relationship with verbal ability were found. In Study 3, 88 children in grades 1, 3, and 5 from Kinshasa, Africa were given the DJS. The trends replicated Study 2. In Study 4, 56 children from lower and middle social classes in kindergarten and grade 3 were given the DJS. The lower class lagged behind the middle class in their DJS scores in both grades. Implications for distributive justice research were drawn. (Author/RL)

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Assessing Young Children's Moral Development: A Standardized and Objective Scale

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Abstract

A paired-comparisons measure of distributive justice development (DJS) was developed and validated in four studies. In Study 1, 104 children from kindergarten, second, and fourth grades were given the DJS and two Piagetian logical reasoning tasks. Age trends and a relationship with logical reasoning were found. In Study 2, 66 children from first, third, and fifth grades were given the DJS and a measure of verbal ability. Age trends and a low relationship with verbal ability were found. In Study 3, 88 first, third, and fifth grade children from Kinshasa, Africa were given the DJS. The trends replicated Study 2. In Study 4, 56 children from the lower and middle social classes in kindergarten and third grade were given the DJS. The lower class lagged behind the middle class in their DJS scores in both grades. Implications for distributive justice research are drawn.

Assessing Young Children's Moral Development:

A Standardized and Objective Scale

The development of moral judgment in children has been a popular area for researchers since Piaget's (1932) and Kohlberg's (1958) pioneering efforts in this area. Recently, Damon (1975) has narrowed the broadly-defined area of moral judgment to assess children's understanding of distributive justice or the fair allocation of goods in a group or society. Such a domain is important to study since this form of reasoning is part of "everyday" life, not only in childhood, but throughout one's life. People are faced far more often with distributive decisions--such as giving and receiving allowances, giving to charities, reinforcing others' behavior--than with such Kohlbergian justice decisions as saving a life through theft of an exorbitantly priced drug.

Distributive justice as one aspect of the Kohlbergian tradition emphasizes structuralism and the development of stages through structural analyses. Damon's stages, which include distributive justice reasoning from early to middle childhood, are as follows:

0-A: The child believes that whoever wants the most money or goods should have it.

0-B: The child bases distributive decisions on external characteristics. The oldest one, for example, should get more than the others.

1-A: The child believes everyone should receive the same amount regardless of other characteristics.

1-B: The child bases distributive decisions on behavioral reciprocity. In other words, the child believes that those who work harder or do more than the others should get more.

2-A: The child bases distributive decisions on psychological reciprocity.

That is, the child believes that those who are most in need should receive more than the others.

The validity for Damon's stages includes both cross-sectional and longitudinal support, a relationship with Piagetian stages of logical reasoning, and a relationship with behavioral distributive decisions (Damon, 1975, 1977).

Although the validating evidence is encouraging, there is a weakness. The structuralist tradition has perpetuated the interview technique as the only viable data collection procedure (e.g., Damon, 1977; Kohlberg, 1976). Although such a procedure leads to richness in data, there are several problems with the exclusive use of this technique. For one, the interview is not standardized and, therefore, each child takes a somewhat different "test." The lack of standardization leads to a lack of replication since any two studies are likely to have different experimenters with differing interview styles. Structural interviewing leads to many responses that are impossible to categorize (Rest, Note 1). Since interviews are often lengthy, there can be a fatigue effect, especially in young children. Transcriptions of tapes, training of interviewers and training of scorers are time consuming and expensive. Finally, because of the reliance on verbal production by the child, the interview may be confounded by verbal ability (see, for example, the high correlations between social reasoning and verbal IQ in Keller's 1976 work and Turnure's 1975 work).

If distributive justice in particular and structuralism in general is to become more scientifically precise, standardized and objectively scored instruments must be developed. The purpose of the present work is to report on a standardized instrument for assessing children's distributive justice development. The measure is based on Damon's (1977) recommendation that good assessment must include a thorough sampling of the child's knowledge in the distributive area. In Damon's

interview, once a child generates a decision, other alternatives are presented to see if the child continues holding the original belief when faced with new possibilities. With Damon's technique, the interviewer is, in effect, presenting a paired-item test, the pair at any time being the child's current distributive belief and the interviewer's probe. Since an interview does not follow a fixed format, not all alternatives representing each stage may be presented to any given child. For the present work, a standardized, paired-comparisons measure of distributive justice is described and validated in four studies.

Study 1

Both distributive justice and Piagetian logical reasoning involve reciprocity. In distributive justice, there is behavioral (stage 1-B) and psychological (stage 2-A) reciprocity. In logical reasoning there is reversability as seen in conservation tasks where the individual must be able to reverse operations to successfully solve the problem. Both Selman's (1976) and Selman and Damon's (1977) speculations suggest that the logical operation of reversibility precedes the social operation of reciprocity. Given this speculation and the construct of distributive justice, the following were expected:

1) There will be a significant, linear increase in distributive justice reasoning with age;
2) Males and females will progress as a similar rate in distributive justice development since structuralist theory assumes a similar progression within a given cultural group.
3) There will be a relationship between logical and distributive justice reciprocity with logical reciprocity preceding distributive justice reciprocity in development.

Method

Subjects. One-hundred-and-four children from kindergarten, second, and

fourth grade in a Midwestern United States city participated. There were 36 kindergarteners, 17 males and 19 females; 33 second graders participated, 18 males and 15 females; there were 35 fourth graders, 18 males and 17 females. Parental permission was sought before the testing.

Instruments. For the Distributive Justice Scale (DJS), pictures like that in Figure 1 were drawn to represent the different stages of distributive justice for a given dilemma. Figure 1 refers to the following dilemma patterned after Damon (Note 2):

> These boys and girls all go the the same camp. This is Betty, she's the oldest one at the camp; this is Jennifer whose family does not have much money; this is David who made the most paintings, and this is Matthew. One morning they all thought it would be a good idea if they got out their paints and painted pictures of what they saw around the camp. When they were done, Betty made 2 paintings, Jennifer made 2, David made 4 paintings, and Matthew made 2. After they did this, they asked the person who runs the camp if he would like some of the paintings. He bought all the paintings and gave some nickels to the children. The children, then, had to decide how to split up the nickles. What is the best way to split up the nickles?

Figure 1 represents stage 1-A since all children get the same amount despite David (lower left) doing more pictures than all the others. Each picture has a standardized statement with a decision and reason for the decision read to the child as the picture is presented. For the stage 1-A example the experimenter says, "In this picture, all children get the same number of nickels so they won't fight about who gets more." As another example, the stage 0-A picture shows Matthew with five nickles and the other children with one each accompanied

by the statement, "In this picture, Matthew gets the most nickles because he wanted those nickles more than anything else in the whole world." The statements representing each stage were balanced for number of words. The average number of words for each stage (derived by adding both statements for a given stage across both dilemmas and dividing) are as follows: 0-A=17; 0-B=17; 1-A=20; 1-B=16; 2-A=19.

Another dilemma with a different story and set of pictures was also given. The second dilemma had the males at the top with a female in the lower left doing the most. This reversal was done to control for subjects' possible sex role biases influencing their responses. As Figure 1 shows, the drawings were done to be as racially non-specific as possible.

For each dilemma, each stage picture and statement was paired with every other stage picture in the paired-comparisons format creating ten pairs. For any given pair, the experimenter places the two pictures in front of the child, says the two statements corresponding to the respective pictures, and asks, "Which picture ends the story the best?" For each pair, a random ordering determined which picture was presented first. The order of presentation for the ten pairs was also determined through random selection.

Besides the ten pairs, three pairs have been randomly chosen which are repeated at the end of each dilemma to check for consistency. These repeated pairs were presented in reverse order of the original pairings to control for primacy or recency effects. If a recency effect were operating and the pair orders were not reversed, the child would again choose the second statement presented, thus appearing consistent. If the child fails to match on four of the six repetitions across the two dilemmas, his or her data are eliminated from the sample. In this study, data of two kindergarners and one second grader were omitted by this procedure. Total administration time for both dilemmas is approximatley 12-15

minutes per child.

The Distributive Justice Scale is scored by selecting the child's preferred stage via the picture comparisons for each dilemma. For example, if the child chose 1-A over all other stages, the child would be assigned that stage for the dilemma. A complication arises as in any paired-comparison test if a triangular relationship exists such as 2-A > 1-B; 1-B > 1-A; 1-A > 2-A. In this case the lowest stage in the triangle is chosen since the child is most likely in transition, and, therefore, the only stage on which the child is consolidated is probably the lowest of the three. The final score is obtained by converting developmental levels into numerical values (e.g., 0-A = 0.0, 0-B = 0.5, 1-A = 1.0, and so forth). A mean of the two dilemmas represents the total score. This score assumes developmental levels are continuous rather than discontinuous. That is, a value of 1.25 is interpreted as the individual being between 1-A (1.0) and 1-B (1.5), showing evidence for both kinds of reasoning (see Flavell 1971 for further discussion on the continuous/discontinuous controversy).

For the Piagetian logical reasoning tasks, the classic tasks of liquid and mass conservation (Flavell, 1963) were given to each child. Both were given so the logical and social reciprocity relationship, if found with one Piagetian task, could be replicated with the other.

Procedure. Each child was individually administered the tasks by one of three university students. Prior to testing, the experimenters practiced giving the tasks for one week to a university student who had tested 30 students previously with the DJS. Within the Distributive Justice Scale, the order of dilemmas was counterbalanced across subjects to control for order effects. Within logical reasoning, the liquid and mass tasks were counterbalanced. The presentation of either logical reasoning or distributive justice was also counterbalanced.

Results and Discussion

Internal consistency reliability of the DJS was examined by the Spearman-Brown formula which was applied to the correlation between the two dilemmas yielding a value of .61. To test for age effects, a linear trend analysis was performed on the DJS across the three grades. A significant, upward linear trend was found, $F(1, 101)=23.55$, $p < .001$. Means and standard deviations are in Table 1. To examine mean differences in age and sex effects, a two-way ANOVA was performed on the DJS. As expected, there was a significant main effect for grade, $F(2, 98)=11.52$, $p < .001$, but not for sex. Tukey's post-hoc procedure showed that the kindergarten DJS mean was significantly lower than either the second or fourth grade means. The strength of that developmental relationship as measured by Pearson r was .39. It was also found that consistency of performance on the DJS as measured by the six repeated items increased with grade level, $r = .33$, $p < .001$.

The next analysis examined the relationship between distributive justice reciprocity and logical reciprocity. A point-biserial correlation could not be performed here since the great majority of fourth graders had passed both conservation tasks, leaving no variability in these scores. To eliminate any ceiling biases and to test the hypothesis that Piagetian logical reciprocity precedes social cognitive reciprocity, contingency tables like those in Table 2 were constructed. Logical reciprocity is defined as the child passing a test of conservation whereas social reciprocity is defined as the child's distributive justice total score being 1.5 or higher. Table 2 shows the presence or absence of both logical and social reciprocity across age. The relationship is shown with both liquid and mass conservation. The hypothesis to be tested is whether the children progress from the lower right cell (showing neither kind of reciprocity) in

the youngest group to both the lower left (showing logical reciprocity only) and the upper right (both reciprocities) in the older groups, while not progressing to the "error" cell in the upper right where social but not logical reciprocity is realized. As can be seen in the table, the data for both liquid and mass conservation suggest the expected trend. To test this, multinomial analyses were performed on the dichotomous responses across age for liquid conservation and distributive justice. First, the shift from the fail logical and fail social reciprocity cell to the fail social but pass logical cell was examined. This was tested by comparing the proportion in each of these two cells at kindergarten vs. the proportion in fourth grade. A complete pairwise procedure including second grade was not done so that the alpha level could remain at $p < .05$ while still examining a monotonic trend. The z statistic showed significance, $z=9.09$ (the critical value being 1.645). This suggests a shift from passing neither kind of reciprocity to passing only logical reciprocity with age. The eta and eta^2 coefficients, interpreted respectively as strength of association between these patterns and age and the amount of shared variance, were .36 and .14. Eta here was derived via an associational extension of Marascuilo and Serlin's (1977) statistic for examining interactions for dichotomous variables in a repeated measures design. The next shift examined was from failing both in kindergarten to passing both in fourth grade. Again, we find a significant shift in this direction with age, $z=9.41$, $eta=.40$, $eta^2=.16$. The shift from the lower left to upper left cell was not significant. These multinomial analyses suggest that as children develop, they develop logical reciprocity first or develop logical and social reciprocity synchronously, but generally do not develop social reciprocity first.

It should be noted that some children do show the unexpected pattern of social but not logical reciprocity. This pattern, however, is seen in only 14 out of 104 children for the liquid conservation task. Whether this pattern represents

a true developmental pattern or measurement error cannot be determined here. It is suggestive of measurement error when it is realized that this cell decreases while the opposite pattern of possessing logical but not social reciprocity increases with age.

The replicate of the above reciprocity findings was with conservation of mass and social reciprocity. The data show the same pattern. There is a significant shift from passing neither in kindergarten to passing only logical reciprocity in fourth grades, $z=5.87$, $eta=.32$, $eta^2=.10$. A similar shift occurs from passing neither to passing both, $z=6.54$, $eta=.35$, $eta^2=.12$. The only relatively unchanging cell again is the error cell.

Study 1 shows that young children's social reasoning can be assessed in a standardized and objective way in a relatively short period of time. The DJS, as expected, showed adequate internal consistency reliability as well as upward linear development in distributive justice without sex effects. Also as expected, social reciprocity as measured by the DJS is related to logical reciprocity.

Study 2

The next step in the validation of the DJS was to replicate age and sex effects as well as to assess the discriminant validation of the measure. Since the structuralist tradition relies so heavily on verbal production, it is difficult to separate the effects of advanced social reasoning structures from an eloquent vocabulary. As Rubin (1978) has shown, measures of social reasoning development often share as much variance with verbal ability measures as they do with parallel forms of social reasoning. What is needed, then, according to Rubin, are social reasoning measures which show less variance with IQ or verbal ability than they show within themselves via internal consistency analyses. The purpose of Study 2, then, is to assess the relationship of the DJS and a valid measure of

verbal ability. It is expected that there will be upward, linear age trends, no sex effects, and a low relationship between the DJS and verbal ability.

Method

Subjects. Sixty-six children from the same school as Study 1 participated. There were 22 children, half male and half female, from first, third, and fifth grades. Parental permission was sought prior to testing. Only one child's (a first grader's) data were omitted because of lack of consistency on the DJS. He was subsequently replaced in the sample by another child.

Instruments. The DJS and the Peabody Picture Vocabulary Test (PPVT) were used. Not only was the PPVT chosen because of its well-established validity, but because of its shared method with the DJS. The PPVT, like the DJS, assesses through picture recognition. Without a shared method, a discriminant validation could be confounded by method differences rather than construct differences which are responsible for the low relationship. With the PPVT, the examiner presents a picture with four objects. The examiner then names an object and the child chooses the one picture that represents it. The test is stopped when the child misses six out of eight consecutive presentations.

Procedure. The children were individually administered the tasks by three university students. The DJS and PPVT were counterbalanced. Within the DJS, the two dilemmas were again counterbalanced.

Results and Discussion

The reliability of the two dilemmas via the Spearman-Brown formula was .68. Age effects for the DJS were again tested via a trend analysis. There was a significant, upward linear trend from first through fifth grades, $F(1,63)=24.23$, $p < .001$. The means and standard deviations are in Table 3. When the means are compared with those of Study 1, it can be seen that the linear trend seems to hold across the six age groups from kindergarten to fifth grade. A linear trend

analysis was performed to confirm this. Such an analysis could be done since all subjects were drawn from the same population and were tested during the same, general time period. This trend analysis again showed linear, upward development, $F(1,164) = 50.62$, $p < .001$.

To examine the mean differences on the DJS in Study 2, a two-way ANOVA by age and sex was performed. There was a significant, main effect for grade, $F(2,60)=12.59$, $p < .001$, but not for sex. The post-hoc Tukey procedure revealed that the first grade mean was lower than either the third or fifth grade means. The strength of the DJS and age relationship was .51 via Pearson r. When PPVT was partialled out, the correlation remained high, being .49. As in Study 1, consistency of performance also increased with grade level, $r=.31$, $p < .01$.

Age and sex effects were next examined for the PPVT via a two-way ANOVA. There was a main effect for grade, $F(2,60)=26.24$, $p < .001$, but not for sex. Tukey's procedure showed a significant mean difference between grades one and three, between grades one and five, and between grades three and five. The strength of the PPVT and age relationship was .68 via Pearson r.

To test the discriminat validity of the DJS, a Pearson r between DJS and PPVT was performed. The correlation was .25, $p < .02$. While this relationship is in the low range, the internal consistency is rather high (.68) suggesting that distributive justice reasoning as measured by the DJS is a domain which does not overlap a great deal with verbal ability. When grade level was partialled out there was no significant relationship between the DJS and PPVT, the partial correlation being -.15, $p < .12$.

The age trends for the DJS again held, even when verbal ability was partialled out, and the lack of sex effects was replicated. Even with a shared method, the DJS is only related to verbal ability in the low range if age as a mediator is not considered. Because the partial correlation could have partialled true as

well as extraneous variance, the conservation conclusion is that the DJS shows a low, but significant relationship with verbal ability.

Study 3

To this point, the DJS as well as Damon's interview have been validated only in a Western culture. Since the DJS concerns the distribution of goods, the previous two studies may not have demonstrated distributive justice development as much as they have shown that progression in a Western capitalist environment of distribution. To test the generality of distributive justice development with the DJS, a study was done in Kinshasa, Zaire, Africa.

Method

Subjects and Culture. Eighty-eight Zairian children from the same school took part. There were 29 first graders, 14 males and 15 females; there were also 29 third graders, 15 males and 14 females; and there were 30 fifth graders, half male and half female. One first and one third grader's data were omitted because of lack of consistency. There is both a Belgian and African tribal influence in the sample. The school is Belgian-owned but is run by native Zairians. The political structure at the time of testing was a dictatorship since the Zairian leader was known as the "President for Life." The economic system was not clearly defined at the time of the study since there was both a socialist influence in that some businesses were nationalized and a capitalist influence in that some businesses were privately owned. With regard to socioeconomic class structure, there is a lower, middle, and upper class. The middle class individuals work in businesses in Kinshasa. For this study, the middle class was chosen since the Study 1 and 2 samples were American middle class.

Instruments. The DJS was translated into Lingala, the native language of Kinshasa, and kept as close to the original as possible. The original pictures

were judged to be appropriate for the culture by a Zairian professor at the University of Zaire.

Procedure. A Zairian male adult conducted the assessments. Before the data collection, he was observed assessing six children, two at each grade of this study, by an American familiar with the DJS. The two dilemmas were counterbalanced across subjects. The experimenter was blind to the American findings before and during testing.

Results and Discussion

Reliability for the two dilemmas via the Spearman-Brown formula was .77. A trend analysis for age effects showed a significant, linear trend of upward development, $F(1,85)=15.75$, $p < .002$. Table 4 shows the means and standard deviations. The two-way ANOVA by grade and sex revealed a significant, main effect for grade, $F(2,82)=8.09$, $p < .001$, but not for sex. Tukey's post-hoc procedure showed the first grade mean to be lower than the third or fifth grade means. The DJS and age correlation was .40. As in the previous two studies, consistency of performance increases with grade, $r = .20$, $p < .03$.

The Kinshasa findings replicate the Study 2 DJS findings very closely. An examination of Tables 3 and 4 shows the extent to which the two studies replicate one another. Despite different social structures, the two cultures show the same developmental progression through middle childhood. The findings show that the DJS can be used in cultures other than the American middle class.

Study 4

Although no differences seemed apparent between the groups in Study 2 and 3, this may be the result of middle class sampling. Several researchers have shown that within a given culture social class differences in moral development exist (Cauble, 1975; Fleishman, 1974; Kohlberg, 1958). If such differences exist in

the general moral development construct they should also exist in distributive justice. Study 4, then, examines social class differences in the DJS.

Method

Subjects. Fifty-six children from an elementary school in southern Florida participated. There were 28 children from kindergarten, half lower class and half middle class. Of the 14 lower class, nine were male and five were female. Of the 14 middle class, eight were male and six were female. There were also 28 children from third grade, half middle and half lower class. There were six males and eight females in the lower class while there were eight males and six females in the middle class. Social class was measured by Hollingshead's (Note 3) four-factor index of social status. All children chosen were white so that social class and race would not be confounded.

Instruments. The Distributive Justice Scale was used along with the Stanford-Binet vocabulary (Terman & Merrill, 1973) to control for verbal differences confounding the distributive justice results.

Procedure. A graduate student conducted the assessments with each child. All children were individually administered the tasks.

Results and Discussion

The internal consistency reliability of the DJS via the Spearman-Brown formula was .70. To test for grade and social class effects on the DJS, a two-way ANOVA was run. A significant, main effect was found for grade $F(1,52)=28.12$, $p < .001$, and for social class, $F(1,52)=20.41$, $p < .001$. No interactions occurred. The strength of the age and DJS relationship via Pearson r was .53. The strength of the social class and DJS relationship via eta was .45, $p < .001$. Means and standard deviations are in Table 5.

Although the DJS and vocabulary correlated only .15 ($p < .15$) when grade was

partialled out, an analyses of covariance of grade and social class on distributive justice controlling for vocabulary was performed in case the latter contributed to the DJS and social class relationship. The grade effect for distributive justice was again significant, $F(1, 51)=18.91$, $p < .001$; social class was again significant, $F(1,51)=18.59$, $p < .001$; and no interactions were found. The strength of the DJS and age relationship remained strong (.42, $p < .001$) when vocabulary was partialled out; the DJS and social class relationship also remained strong when vocabulary was partialled (.42, $p < .001$).

The grade and social class effects on vocabulary were next examined via a two-way ANOVA. The grade effect was significant, $F(1,52)=19.00$, $p < .001$ ($r=.51$, $p < .001$), but the social class main effect and the grade by social class interaction were not significant. While vocabulary went up with age, there were no social class effects for this variable. The partial correlation of vocabulary and age controlling for the DJS remained strong, .40, $p < .001$.

As predicted, lower class children enter school with a developmental lag in distributive justice development and that lag continues as the children advance in the elementary grades. The data do not suggest that the differences are the result of general cognitive deficits since no social class differences in verbal ability occurred, nor do they suggest race differences as a cause since the latter was controlled. A recently completed study which replicated this one has shown that the social class differences are related to a lack of reciprocal peer interaction in school (Enright, Enright, Manheim, & Harris, Note 5). In a sociometric peer rating, lower class individuals were chosen most often for negative attributes (does not play fair) while middle class children were chosen most often for positive attributes (best friend). The lack of reciprocal interactions may play a part in the lower class children's non-reciprocal cognitions.

General Discussion

This series of studies was undertaken for two reasons: a) as a test of a methodology, and b) to learn something substantive about distributive justice development in children. From the methodological viewpoint, the studies show that, despite a structuralist tradition, it is possible to develop a reliable and valid measure that leads to standardized assessment and objective scoring procedures. The reliabilities for all four studies seem adequate for young children's responses which may not be as homogeneous as older individual's (see for example, Flapan, 1968). With regard to validity for the measure, there are strong age trends, no sex effects, a relationship with logical reciprocity, a discriminant relationship with verbal ability, generality beyond a Western culture, and expected social class differences.

Given these psychometric properties, the methodological importance of the DJS seems to be the following: a) the standardization allows for direct comparison of distributive justice reasoning in different parts of the country or world by different researchers; b) the relatively quick procedure minimizes fatique in young children; c) time and expense of transcriptions and training of scorers are minimized; d) the paired-comparisions procedure assures that the child is exposed to all the different alternatives of the distributive justice dilemma; and e) the format does not rely on verbal production. Not only may the latter be confounded with verbal ability as previously stated, but also such production may obscure actual abilities in less verbal or shy youngsters, especially when tested by an unfamiliar adult. These studies certainly were not done to suggest the clinical interview be abandoned. Instead, they were done to give researchers a choice of methods. Rest (Note 4) has already done this successfully with the Kohlbergian construct of moral development with adolescents and adults.

From the substantive viewpoint, the series of studies shows that with a recognition task in both Western and non-Western cultures those in early childhood show evidence of 0-B and 1-A distributive justice thinking. They base decisions on externals as well as on giving everyone the same amount. Those in early middle childhood, the second and third graders, show evidence primarily of stages 1-A and 1-B, the latter being a reciprocity of behavior where others are paid back in kind for their acts. Those in middle childhood, the fourth and fifth graders, show evidence of 1-B and 2-A reasoning, the latter being a psychological reciprocity based on need. Such a progression supports Damon's hypothesized sequence. The progression is independent of gender but not independent of social class within the American culture. The latter finding may be the result of non-reciprocal peer relations if Piaget (1932) is correct in speculating that such relations are important or even necessary for the development of cognitive reciprocity. This finding should be explored further if the lower class is to benefit from social class-integrated schooling.

These studies further suggest that logical reciprocity precedes or parallels the development of distributive justice reciprocity. The attainment of both kinds of reciprocity is not yet complete by fourth grade since about half the children possessed both reciprocities while the other half possessed only logical reciprocity at this age. Finally, it seems that consistency of distributive justice performance increases with age. Such a finding suggests there is a greater cognitive integration as children mature in that they are more sure of the beliefs they hold. Such development is consistent with Werner's (1948) assumptions of integration regarding general cognitive development.

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Figure Caption

Figure 1. Example of a distributive justice picture shown to the child during testing.

Table 1

Study 1 Means and Standard Deviations for the Distributive Justice Scale

	Grade					
	Kindergarten [a]		Second [b]		Fourth [c]	
Distributive Justice	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Male	.88	.58	1.15	.43	1.55	.50
Female	.88	.64	1.23	.42	1.37	.35
Total	.88	.60	1.21	.45	1.46	.44

[a] N = 36

[b] N = 33

[c] N = 35

Table 2

Relationships between logical and distributive justice reciprocity

Distributive Justice Reciprocity

Liquid Conservation as Logical Reciprocity

		pass	fail
Kindergarten	pass	0	7
	fail	1	28
Second Grade	pass	6	5
	fail	8	14
Fourth Grade	pass	16	2
	fail	15	2

Mass Conservation as Logical Reciprocity

	pass	fail
	[illegible]	4
	6	23
	7	4
	14	8
	17	1
	17	0

Table 3

Study 2 Means and Standard Deviations
for the Distributive Justice Scale & PPVT

	Grade					
	First [a]		Third		Fifth	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Distributive Justice						
Male	1.01	.61	1.52	.45	1.66	.20
Female	.88	.48	1.40	.37	1.64	.14
Total	.98	.54	1.46	.41	1.65	.17
PPVT						
Male	65.09	6.00	73.18	10.38	90.09	10.39
Female	63.45	4.18	73.09	9.69	81.73	15.23
Total	64.27	5.12	73.14	9.80	85.91	13.42

[a] N = 22 per grade

Table 4

Study 3 Means and Standard Deviations for the Distributive Justice Scale

	Grade					
	First[a]		Third		Fifth[b]	
Distributive Justice	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Male	1.00	.76	1.30	.53	1.43	.64
Female	.87	.55	1.43	.72	1.69	.48
Total	.93	.65	1.36	.62	1.57	.56

[a]N = 29 for both first and third grade samples

[b]N = 30

Table 5

Study 4 Means and Standard Deviations for

Distributive Justice and Verbal Ability

	Grade			
	Kindergarten[a]		Third Grade	
	$\bar{X}$	SD	$\bar{X}$	SD
Distributive Justice				
lower class	0.45	0.50	1.32	0.63
middle class	1.21	0.53	1.79	0.34
total	0.83	0.64	1.55	0.55
Verbal Ability				
lower class	4.71	2.33	7.86	3.68
middle class	5.79	2.58	9.14	2.35
total	5.25	2.47	8.50	3.09

[a]N = 28 per grade; 14 per social class